

BELIAYEV, M.

Public inspectors should be concerned with pedestrians. Avt.transp.
38 no.11:49 N '60. (MIRA 13:11)
(Traffic safety)

BELYAYEV, L.V., Cand Med Sci --- (disc) "Innervation of the thyroid-cervical trunk^k and its arteries in humans and the arterial cervical trunk^k and its branches in certain laboratory animals." *Stalingrad*, 1958. 16 pp (Stalingrad Med Inst), 250 copies (HL, 46-58, 142)

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

REF ID: A62130718

L 24078-66

ACC NR: AP6014968

electric station and water flow rate of the hydroelectric station as controlled parameters, the problem is to reduce the set of differential equations describing the operation of the station to a minimum by usage of the proper form for the functional determining the control actions to be applied to the system at any moment in time. It is found to be a characteristic of systems with several hydroelectric stations that some of these, the more effective ones, will operate, when the optimization is applied, at maximal capacity for the first portion of the year, decreasing toward the end of the year only to avoid excessive drainage of reservoirs, at which time the less effective stations will be brought into play. Orig. art. has: 29 formulas and 1 table.

[JPRS]

SUB CODE: 10, 12 / SUBM DATE: 08May65 / ORIG REF: 003

Card

2/2 *plw*

L 24078-66 - EWT(1)

ACC NR: AP6014968

SOURCE CODE: UR/0281/65/000/005/0013/0022

AUTHOR: Belyayev, L. S. (Irkutsk)

ORG: none

TITLE: Application of the Pontryagin's maximum principle for optimization of the operation of a complex power system *11*

SOURCE: AN SSSR. Izvestiya. Energetika i transport, no. 5, 1965, 13-22

TOPIC TAGS: hydroelectric power plant, thermoelectric power plant, electric power production, dynamic programming, nonlinear programming, differential equation

ABSTRACT: The theory of optimal processes is applied to the problem of optimization of the yearly operating conditions of a mixed power system, given fixed hydrographs of water flow at a hydroelectric plant. This method of solution allows a number of important characteristics of combined operation of hydroelectric and thermal electric power stations to be clarified. Many of these characteristics cannot be discovered using numerical methods of nonlinear or dynamic programming, or the classical methods of variation computation. Selecting the amount of conditional (standard) fuel expended at the thermal station and the amount of water drained from the reservoir at the hydroelectric station as parameters characterizing the state of the system to any moment t in the yearly operations, and the power of the thermal

Card 1/2

UDC: 621.311.1.003

BELYAYEV, L.S., kand. tekhn. nauk

Selecting the water level and preflood working capacity of
hydroelectric power station reservoirs. Izv. vys. ucheb. zav.;
energ. 8 no.7:86-92 J1 '65. (MIRA 18:9)

1. Sibirskiy energeticheskiy institut Sibirskogo otdeleniya
AN SSSR.

ZOLOTAREV, T.I., akademik, doktor tekhn.nauk; SEMENOV, V.V., kand.tekhn.nauk;
BELYAYEV, I.S., kand.tekhn.nauk

Principal layout of the hydroelectric power engineering laboratory
of the Siberian Power Engineering Institute of the Academy of
Sciences of the U.S.S.R. Trudy MEI no.46:97-120 '63.

(P. RA 16.3)

1. AN Kazakhskoy SSR (for Zolotarev).
2. Kafedra gidroenergetiki
Moskovskogo ordena Lenina energeticheskogo instituta (for Semenov).
3. Sibirskiy energeticheskii institut AN SSSR (for Belyayev).

KUZNETSOV, Yu.A.; MAKAROV, A.A.; MELENT'YEV, L.A.; MERENKOV, A.P.; NEKRASOV, A.S.; TSVETKOV, N.I.; KUZNETSOV, Yu.A.; MAKAROVA, A.S.; KARPOV, V.G.; MANSUROV, Yu.V.; SYROV, Yu.P.; KHRILEV, L.S.; TSVETKOVA, L.A.; VOYTSEKHOVSKAYA, G.V.; YEFIMOV, N.T.; LEVENTAL', G.B.; KHANAYEV, V.A.; BELYAYEV, L.S.; GAMM, A.Z.; KARTELEV, B.G.; KRUMM, L.A.; LIOPO, T.N.; SVIRKUNOV, N.N.; DRUZHININ, I.P.; KONOVALENKO, Z.P.; KHAM'YANOVA, N.V.; SHVARTSBERG, A.I.; NIKONOV, A.P.; STARIKOV, L.A.; POPIRIN, L.S.; PSHENICHNOV, N.N.; TROSHINA, G.M.; CHEL'TSOV, M.B.; SVETLOV, K.S.; SUMAROKOV, S.V.; TAKAYSHVILI, M.K.; TOLMACHEVA, N.I.; KHASILEV, V.Ya.; KOSHELEV, A.A.; KUDINOVA, L.I., red.

[Methods for using electronic computers in the optimization of power engineering calculations] Metody primeneniia elektronno-vychislitel'nykh mashin pri optimizatsii energo-
ticheskikh raschetov. Moskva, Nauka, 1964. 318 p.

(MIRA 17:11)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Energeticheskiy institut. 2. Chlen-korrespondent AN SSSR (for Melent'yev).

BELYAYEV, L.S., kand.tekhn.nauk

Joint system of operating hydraulic and thermal plants in years
of heavy rainfall. Gidr.stroi. 32 no.9430-34 S '62. (MIRA 16:2)

(Electric power plants)

BELYAYEV, L.S., kand.tekhn.nauk

Mounting lines on towers with three 500 kv. networks and presence
of voltage in the adjacent lines. Elek. sta. 32 no.7:38-39 J1
'61. (MIRA 14:10)

(Electric lines--Overhead)

BELYAYEV, L. S., Cand Tech Sci (diss) -- "Some problems of the annual power regulation of runoff with a cascade of parallel hydroelectric power stations".
Leningrad, 1959. 14 pp (MSE /unidentified/ USSR, Glavenergoprojekt /Main Power Designing/, All-Union Sci Res Inst of Hydraulic Engineering im B. Ye. Vedemeyev),
250 copies (KI, No 10, 1960, 129)

BELYAYEV, L.S., inzh.

Maintaining a yearly regulation regimen in power systems with
several hydroelectric power stations. Izv.VNIIG 61:108-132
'58. (MIRA 13:6)
(Hydroelectric power stations)

BELYAYEV, L.S.

BELYAYEV, L.S., inzhener.

System of annual regulation of hydraulic power stations entering
the power network. Elek.stn.28 no.7:28-35 J1 '57. (MLRA 10:9)
(Hydroelectric power stations)

NECHAYEV, G.A.; FEDOTOV, Ye.D.; BELYAYEV, L.N., kand. tekhn.
nauk, nauchn. red.

[Use of plastics for waterproofing buildings] Primenenie
plasticheskikh mass dlia gidroizolatsii zdani. Lenin-
grad, Stroiizdat, 1965. 175 p. (MIRA 18:7)

BELIAYEV, L. N., kand. tekhn. nauk; GOLITSYNSKIY, D. M., inzh.

Working tunnels using anchor supports and sprayed concrete.

Transp. stroi. 13 no.4:19-22 Ap '63. (MIRA 16:4)

(Tunnel lining)

Waterproofing of underground ...

S/230/62/000/012/001/001
E194/E135

withstand a hydrostatic pressure of 5 - 6 atm, and if on the same side as the water pressure, 8 - 12 atm or more. The coatings are strong, but waterproofing breaks down if cracks of 0.4 mm appear in the concrete. If fibreglass cloth is applied, waterproofing is maintained until cracks of 1.5 - 4 mm appear in the concrete. The same fire and health safety precautions apply as with paints using volatile solvents. In view of the falling costs of epoxy resins the cost of waterproofing a square metre of concrete, including labour, materials and equipment costs, should not exceed 1 rouble 80 kopecks, which is much less than conventional methods. There are 1 figure and 1 table.

Card 2/3

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S/230/62/000/012/001/001
E194/E135

AUTHORS: Borisenkov, I.A., Candidate of Technical Sciences, and
Belyayev, L.N., Candidate of Technical Sciences

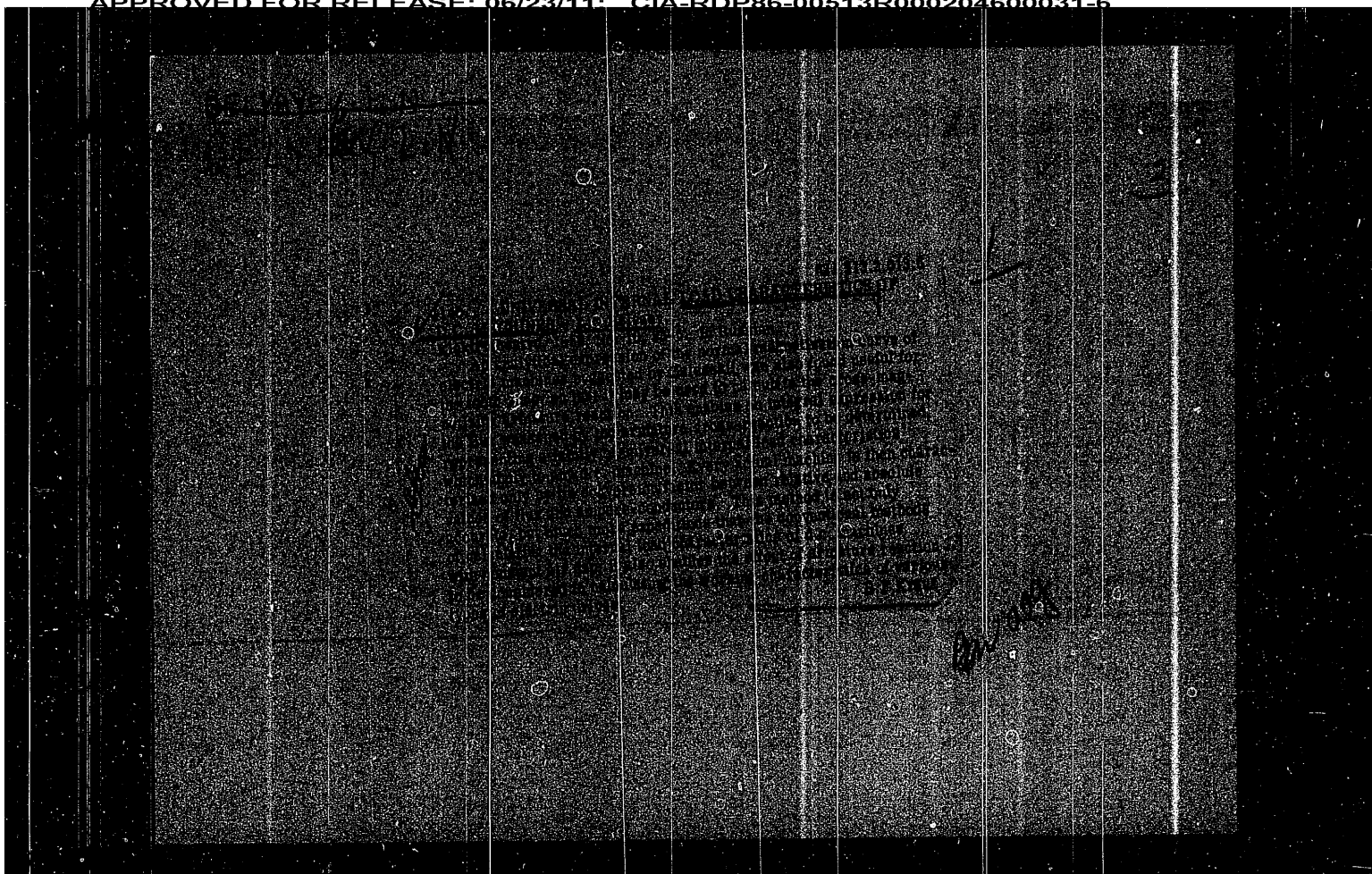
TITLE: Waterproofing of underground structures with synthetic
materials

PERIODICAL: Transportnoye stroitel'stvo, no.12, 1962, 22-24

TEXT: Compositions recommended for waterproofing the inner
surfaces of concrete linings of underground structures are given
in the table below. The surface is first cleaned, the first coat
is applied and the second and third coats are applied at two-day
intervals. A silvery vitreous finish is produced. The following
epoxide paints may also be used: first coat grade ЭП-55 (EP-55)
diluted with equal parts of solvent П-5 (R-5); second coat filler
Э-4020 (E-4020) or Э-4021 (E-4021); and third coat enamel
ЭП-56 (EP-56) diluted with thinners to suit spray gun. The
hardener used is a 50% solution of hexamethylenediamine in ethanol.
The filler is applied a day after the first coat, and two days later
one or two coats of top coat are applied. If applied to the
concrete on the side opposite the water pressure, these materials
Card 1/3

ILLEGIBLE

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204600031-6



BELYAYEV, L. N., Engineer.

"Experimental and Design Investigations of a Generator for Autobus Electric Transmission." Sub 26 Oct 51, Moscow Order of Lenin Power Engineering Institute V. M. Molotov.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55.

ACC NR: AR6035054

reference 8E549 in the issue). The sharp increase in AEMF under nonuniform illumination of a sample makes it possible to use this method for increasing the sensitivity of acoustic-electrical meters in practical applications of AEE.
[Translation of abstract] [SP]

SUB CODE: 20/

Card 2/2

ACC NR: AR6035054

SOURCE CODE: UR/0058/66/000/008/E072/E072

AUTHOR: Krasil'nikov, V. A.; Belyayev, L. M.; Lyamov, V. Ye.;
Sil'vestrova, I. M., Uchastkin, V. I.

TITLE: Investigation of the acoustical-electrical effect in cadmium sulfide
monocrystals

SOURCE: Ref. zh. Fizika, Abs. 8E550

REF SOURCE: Sb. Nekotoryye vopr. vzaimodeystviya ul'trazvyk, voln s
elektronami provodim. v kristallakh. M., 1965, 95-110

TOPIC TAGS: crystal, cadmium sulfide, monocrystal, acoustical electrical
effect

ABSTRACT: A study was made which showed that within the frequency range of
20--75 Mc, the Weinrich formula is satisfied (at least qualitatively) in piezo-
semiconductors for the acoustic electric effect (AEE). In cadmium sulfide mono-
crystals AEE is considerable and because of its linear dependence on ultrasound
may be used to measure ultrasound intensity in solids. The spectral character-
istics of acoustic-electric emf (AEMF) do not agree with the theoretical (see

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ACC NR: AR6035053

two fused quartz buffers. The conductivity of the samples was varied by illuminating them with an incandescent lamp through a light filter. Dependence curves of ultrasound absorption as a function of short-term exposures to radiation were found to be in agreement with theoretical curves and with results obtained by other authors. A super-position the drift field with $\sim 10 \mu$ sec pulses synchronized with ultrasound pulses, showed in some samples an amplification of ultrasound waves, polarized along the optical axis of the crystals. The greatest absolute amplification obtained for 24-Mc transverse waves was $\sim 20 \text{ dB/cm}$. At greater driving voltages self-excitation of ultrasound oscillations occurred without benefit of input signals. The point of inflection in the volt-ampere characteristic of illuminated samples corresponds to the excitation of oscillations and the beginning of amplification. The drift mobility of electrons within the $140\text{--}180 \text{ cm}^2/\text{v} \cdot \text{sec}$ range is computed from the magnitude of the drift field at the moment of current saturation and of ultrasound intensification. V. Shutilov. [Translation of abstract] [SP]

SUB CODE: 20/

Card 2/2

ACC NR: AR6035053

SOURCE CODE: UR/0058/66/000/008/E072/E072

AUTHOR: Krasil'nikov, V. A.; Belyayev, L. M.; Lyamov, V. Ye.; Panova, V. P.; Sil'vestrova, I. M.; Uchastkin, V. I.

TITLE: Study of the attenuation and amplification of ultrasound in cadmium sulfide monocrystals

SOURCE: Ref. zh. Fizika, Abs. 8E549

REF SOURCE: Sb. Nekotoryye vopr. vzaimodeystviya ul'trazvyk. voln s elektronami provodim. v kristallakh. M., 1965, 66-76

TOPIC TAGS: cadmium sulfide, ultrasound, semiconductor crystal, dielectric crystal, ultrasound absorption, ultrasound amplification, pulse amplification, pulse absorption, ultrasonic wave

ABSTRACT: A study was made of the absorption and amplification of short pulses of longitudinal and transverse ultrasonic waves with frequencies of 20—25 Mc in cadmium sulfide monocrystals with varying degrees of photosensitivity and dark conductivity. Samples with In-electrodes were cemented with styracryl between

Card 1/2

L 05712-67 EWT(1)/EWT(m)/EWT(t)/EMI IOT(e) CD/30

ACC NR: AR6010500

SOURCE CODE: UR/0196/65/000/010/B006/B006

AUTHOR: Belyayev, L. M.; Nabatov, V. V.; Martyshev, Yu. N.; Bendrikova, G. G. 16
B

TITLE: The electrical phenomena accompanying the deformation of alkali halide crystals 27 27

SOURCE: Ref. zh. Elektrotehnika i energetika, Abs. 10B37

REF SOURCE: Sb. Probny dielektrikov i poluprovodnikov. M.-L., Energiya, 1964, 343-346

TOPIC TAGS: alkali halide, crystal deformation, electric phenomenon

ABSTRACT: An attempt is made, on the basis of experimental data, to characterize the electrical phenomena occurring during the disintegration of LiF and CsI crystals. [Translation of abstract] 1 illustration and bibliography of 14 titles. [Institute of Crystallography, AN SSSR, Moscow (In-t kristallografii AN SSSR)]

SUB CODE: 20

Card 1/1

UDC: 548.0:537

1. 05771-67

ACC NR: AR6031884

elastic wave in a crystal is maximum. The data on conducted measurements may serve as a criterion for sampling the CdS crystals for amplification and may be used for creating resonators with variable light, quality, and frequency. [Translation of abstract]

SUB CODE: 20/

Card

2/2-*egle*

1 05771-0. ENT(0)/EWP(1)/ETI 13P(8) 3D

ACC NR: AR6031884 SOURCE CODE: UR/0058/66/000/006/E090/E090

AUTHOR: Sil'vestrova, I. M.; Panova, V. P.; Belyayev, I. M. 34/2

TITLE: Investigation of the spectral relationship of the Young modulus and the logarithmic decrement of longitudinal oscillations along the C axis of a cadmium sulfide crystal in the region of its photosensitivity 17

SOURCE: Ref. zh. Fizika, Abs. 6E710

REF SOURCE: Sb. Nekotoryye vopr. vzaimodeystviya ul'trazvuk. voln s elektronami provodim. v kristallakh. M., 1965, 47-65

TOPIC TAGS: Young modulus, cadmium sulfide, wave propagation, elastic wave, standing wave, photosensitivity

ABSTRACT: A method has been described for determining some parameters needed for amplification of the supersonic waves, including elastic constant waves in the direction of wave propagation, the electromechanical bonding coefficient, and the sample conductivity. From the measured values of changes in the logarithmic decrement of attenuation and the elastic moduli, it is possible to determine the spectral region where an electron interaction of conductivity with the standing and

Card 1/2

L 09383-67

ACC NR: AR6033775

obtained and measurements were made of their photoelectric and optical properties (spectral photoconductivity curves, transmission spectrum in the visible region, dark current volt-ampere characteristics, lux-ampere characteristics) and piezoelectric moduli and elastic moduli at a constant field intensity and constant inductance. The results were found to be in good agreement with published data on crystals grown from the gas phase. However, the monocrystals obtained from melt are found to be less homogeneous. See also Ref. Zh. Fiz. 1966, 5A553. L. Rashkovich. [Translation of abstract]

SUB CODE: 20/

Card 2/2 *ml*

L 09383-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) GG/JD
ACC NR AR6033775

SOURCE CODE: UR/0058/66/000/007/A051/A051 59

AUTHOR: Belyayev, L. M., Gil'varg, A. B.; Panova, V. P.; Sil'vestrova, I. M.; Smirnov, S. P.

TITLE: Growing cadmium sulfide crystals from the melt and an investigation of their properties

SOURCE: Ref. zh. Fizika, Abs. 7A435

REF SOURCE: Sb. Nekotoryye vopr. vzaimodeystviya ul'trazvuk. voln. s elektronami provodim. V kristallakh, M., 1965, 33-46

TOPIC TAGS: crystal, cadmium sulfide, melt, cadmium sulfide monocrystal, photoconductivity, visible region, dark current, piezoelectric modulus, elastic modulus

ABSTRACT: A description is given of apparatus for growing large crystals of the $A^{II}B^{VI}$ type from the melt under pressure, both by the method of controlled heat removal and the method of zone refining. The working space is heated by using a resistance furnace or high-frequency current. Cadmium sulfide monocrystals are

Card 1/2

L 36404-66

ACC NR: AP6018774

-quanta after bombardment by 14 Mev neutrons. Mixed naphtalene was compared with mixed octaneutronaphtalene by this method. Maxima were observed in the spectra of octaneutronaphtalene crystals at a channel number of 25, as a result of the neutron energy. These crystals could serve as a new class of organic scintillators for neutron spectrometers in the megavolt region. Such crystals could be produced industrially in diameters of 200 mm from which various scintillator shapes can be fashioned. Other favorable aspects of these crystals such as light yield and inelastic dispersion by fast neutrons were discussed. The authors thanked I. M. Frank for participation in useful discussions and A. A. Samakhov for providing samples of the various materials. Orig. art. has: 2 figures.

SUB CODE: 18;20 SUBM DATE: 21Jun65/ ORIG REF: 006/ OTH REF: 003

Card 2/2/LLP

L 36404-66 EWT(m)/EWP(j) RM

ACC NR: AP6018774

SOURCE CODE: UR/0070/66/011/003/0439/0442

AUTHOR: Belikova, G. S.; Belyayev, L. M.; Benetskiy, B. A.

ORG: Institute of Crystallography im. P. N. Lebedev, AN SSSR (Institut kirstallografi AN SSSR); Physics Institute (Fizicheskiy institut)

TITLE: Deuteration of organic crystals for scintillation spectrometry by fast neutrons

SOURCE: Kristallografiya, v. 11, no. 3, 1966, 439-442

TOPIC TAGS: ~~deuterated compound; octadeuteronaphtalene~~, anthranilic acid, single crystal, scintillation, luminescence spectrum, fast neutron, *organic crystal*

ABSTRACT: The characteristics of mixed single crystals of octadeuteronaphtalene containing 81.7 and 94.3 at % deuterium, were studied. Mixtures were made by melting the single crystals with 0.7 wt % anthranilic acid--the optimum content for naphtalene scintillation. The isotope interchange between the molecules of anthranilic acid and octadeuteronaphtalene was indicated by luminescence spectra and scintillation spectrometry. Luminescence spectra of pure and mixed crystals were obtained using a mercury lamp with a filter ($\lambda=313 \text{ m}\mu$). The spectra were different from naphtalene due to an isotopic increase in levels resulting from the substitution of hydrogen by deuterium. The scintillating properties were measured by the secondary frequency spectra of γ -

UDC: 548.5 : 539.107.43

Card 1/2

L 26749-66 EWT(m) JD/JG

ACC NR: AF6011479

SOURCE CODE: UR/0070/66/011/002/0334/0338

AUTHOR: Belyayev, L. M.; Litvin, B. N.; Dianova, I. M.; Mel'nikov, O. K. 10 B

ORG: Institute of Crystallography, AN SSSR (Institut kristallografi AN SSSR)

TITLE: Hydrothermal synthesis of crystal phosphors of the type $\text{Na}_x\text{Zn}_y\text{Si}_p\text{O}_q$

SOURCE: Kristallografiya, v. 11, no. 2, 1966, 334-338

TOPIC TAGS: zinc compound optic material, crystal phosphor, synthetic material, luminescence, luminescence spectrum

ABSTRACT: This is a continuation of earlier research (Kristallografiya v. 9, no. 6, 943, 1964) on hydrothermal synthesis of sodium zinc silicates. The present article describes six different crystal phosphors synthesized by this method, with different relative compositions of the components ($\text{Na}_2\text{O}-\text{ZnO}-\text{SiO}_2-\text{H}_2\text{O}$) and their crystal structures. To obtain luminescent zinc silicates of sodium, an activator in the form of MnO was introduced in the charge. Five out of the six crystals produced a luminescence in the green region of the spectrum under the influence of ultraviolet light, although the maxima were not the same for all crystals. One of the produced crystals was the previously produced willemite $\text{Zn}_2\text{SiO}_4(\text{Mn})$ whose luminescent properties are well known. However, the maximum obtained for this crystal was somewhat different from the published data, and this difference is ascribed to the difference in the method of preparing the crystal. Orig. art. has: 6 figures.

SUB CODE: 20/ SUM DATE: 09Feb65/ ORIG REF: 004/ OTH REF: 003

Card 1/1 *fw*

UDC: 548.52

L 23697-66 EWT(1)/EWT(m)/EWP(w)/T/EWP(t) IJP(c) JD/JG/GG

ACC NR: AR6005221

SOURCE CODE: UR/0058/65/000/009/EO74/EO74

AUTHOR: Belyayev, L. M.; Nabatov, V. V.; Martyshev, Yu. N.; Bendrikova, G. G.

TITLE: On electric phenomena accompanying the deformation of alkali-halide crystals

SOURCE: Ref. zh. F'izika, Abs. 9E627

REF SOURCE: Sb. Probov dielektrikov i poluprovodnikov. M.-L., Energiya, 1964, 343-346

TOPIC TAGS: alkali halide, crystal deformation, luminescence, crystal defect, glow discharge, electric property

TRANSLATION: Experiments are described on the study of the electric phenomena which occur during the destruction of certain alkali-halide crystals (LiF, CsI). A special setup was used to register the light pulses produced in a crystal while it is being damaged in compression. Simultaneously with the flash, an electromagnetic pulse was produced, received by an antenna located near the deformed crystal. The hypothesis is advanced that the glow is due to the breakdown in the crystal as it is damaged. The glow was investigated in connection with the formation of cracks. It is shown that it has low intensity, is irregular, and occurs in a few special sections of the crystal cracks. The shape of the observed pulses varies greatly, and the variation in the glow intensity has no regular characteristic at all. V. Sarafanov.

SUB CODE: 20

Card 1/1

L 15768-66

ACC NR: AP5027677

dispersion of ~ 13 A/mm. The value of splitting of the $^4F_{3/2}$ ($\Delta E = 84 \text{ cm}^{-1}$) was much larger than that of the lanthanum halides and scheelite crystals. This indicated the larger force of the intercrystalline field, which was substantiated by the splitting values of the 4I terms. But the relative splitting of individual 4I terms was the same as in the scheelite and other bases: the largest splitting was observed in the $^4I_{15/2}$ and $^4I_{9/2}$ terms (976 and 857 cm^{-1}). It was noticeably smaller in the $^4I_{13/2}$ and $^4I_{11/2}$ terms (574 and 518 cm^{-1}). The study of Nd luminescence was facilitated by the presence of Cr^{3+} in the crystals, which sensitized the luminescence of Nd^{3+} . The absorption spectrums of Cr^{3+} in YAG were described by D. J. Lefford et al. (J. Chem. Phys., 39, 890, 1963). The effect of the sensitization of Nd luminescence by Cr^{3+} was proven both by spectral and by kinetic studies. The results agreed entirely with those of Z. J. Kiss and R. C. Duncan (Appl. Phys. Lett., 5, 200, 1964) on the nonradiative resonance transfer of YAG of excitation energy from chromium to neodymium ions. Orig. art. has: 2 figures.

SUB CODE: 30/ SUBM DATE: 15Apr65/ ORIG REF: 003/ OTH REF: 005

2/2

L 15768-66 EWT(s)/EWT(m)/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c) JD/JG/WH

ACC NR: AP5027677

SOURCE CODE: UR/0051/65/019/005/0817/0819

AUTHOR: Feofilov, P. P.; Timofeyeva, V. A.; Tolstoy, M. N.; Belyayev, L. M.

ORG: none

TITLE: Luminescence of neodymium and chromium in an yttrium-aluminum garnet

SOURCE: Optika i spektroskopiya, v. 19, no. 5, 1965, 817-819

TOPIC TAGS: spectroscopy, crystal lattice structure, luminescence, neodymium, chromium, yttrium, *crystal growing, single crystal*

ABSTRACT: Crystals of Y-Al garnet (YAG) were grown in a fluoride and lead oxide melt. Neodymium and chromium were added to the melt in the form of oxides to activate the crystals, and the infrared luminescence spectrums of the YAG-Nd single crystals were determined in the regions of all four groups of radiations, situated near 0.9, 1.1, 1.4, and 1.8 μ and corresponding to the transition from the excited ${}^4F_{3/2}$ term to the terms ${}^4I_{9/2-15/2}$. The spectrums were taken at 77K by the diffraction spectrometer with receiver from PCS and the radiations of the first group were, in addition, photographed on I-920 film in a spectrograph with a

1/2

UDO: 535.37 : 548.0

BELYAYEV, L.M.; LYAKHOVITSKAYA, V.A.; NETESOV, G.B.; MOKHOSOV, E.V.;
ALEYKINA, S.M.

Synthesis and crystallization of antimony sulfide 1zv
AN SSSR. Neorg. mat. 1 no.12:2178-2181 D '65. (MIRA 18:12)

1. Institut kristallografii AN SSSR. Submitted May 29, 1965.

L 16240-66

ACC NR: AT6002258

5
The CdS crystals possessed photoconductivity in the 540 — 800 mμ range. A shift of the photosensitivity region toward longer wavelengths indicated the presence of a substantial concentration of defects and possible copper impurities. The difference of dark conductivity (10^{-7} — 10^{-10} ohm⁻¹ cm⁻¹) indicated that individual crystals and various portions of one and the same crystal were inhomogeneous. The volt-ampere characteristic of the dark current and photocurrent of a crystal were measured, and the piezoelectric moduli and elastic constants were measured by resonance methods. Authors thank V. A. Demin, K. I. Gusenkova, A. V. Podlesskaya, F. I. Dmitriyeva, and V. F. Miuskova for assistance in the work. Orig. art. has: 3 figures and 1 table."

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 003 / OTH REF: 013

Card 2/2

M/S

L 16240-66 EWT(m)/ENP(t)/ENP(b) IJP(c) JD

ACC NR: AT6002258

(A)

SOURCE CODE: UR/2564/65/006/000/0255/0260

AUTHOR: Belyayev, L.M.; Gil'varg, A.B.; Panova, V.P.; Sil'vestrova, I.M.; Smirnov, S.P.

54
47
Bt.1

ORG: none

TITLE: Growing of CdS crystals from a melt and study of their properties [Paper presented at the Third Conference on Crystal Growing held in Moscow from 18 to 25 November, 1963]

SOURCE: AN SSSR. Institut kristallografi. Rost kristallov, v. 6, 1965, 255-260

TOPIC TAGS: cadmium sulfide, crystal growing, photoconductivity, piezoelectric property, zone melting, photosensitivity, crystal defect, dark current, volt ampere characteristic

ABSTRACT: The paper describes the apparatus and methods for growing crystals of type A^{II}B^{VI} from a melt at high pressure, and deals with a study of the photoelectric, piezoelectric, and other properties of the CdS crystal. The apparatus, the diagrams of which are given, made it possible to carry out the growing from the melt under pressure both by the method of directional removal of heat and by the method of zone melting.

Card 1/2

2

L 1774-66

ACCESSION NR: AP5024570

laser beams with a maximum density of 1.5 Mw/cm^2 , or at higher densities. Although no surface cracks were observed at beam densities below 1.5 Mw/cm^2 , their appearance at the subsurface in the form of "rosettes" was evidenced. The experiments showed that the intensity of triboluminescence was approximately two orders of magnitude greater than the luminescence due to heating at $\lambda = 3470 \text{ \AA}$. It was concluded that the occurrence of triboluminescence generated during the formation of internal cracks is independent of ambient pressure and is determined solely by the processes in the crystal and at its new surfaces. Further studies will be made to determine whether triboluminescence is due to the luminescence of excited atoms or discharge luminescence stimulated by the electron or to ion emission from new surfaces. Orig. art. has: 4 figures. [YK]

ASSOCIATION: Institut kristallografi AN SSSR (Institute of Crystallography, AN SSSR) 44,55

SUBMITTED: 24Feb65

ENCL: 00

SUB CODE: EC, S8

NO REF SOV: 003

OTHER: 001

ATD PRESS: 4/11

mlb
cord 2/2

L 1774-66 EWA(k)/FBD/EWT(1)/EWP(e)/EWT(m)/EPF(c)/EEC(k)-2/EWP(i)/T/EWP(t)/EWP(k)
EWP(b)/EWA(h)/EWA(m)-2 IJP(e) WG/JD/JW/JG/WH

ACCESSION NR: AP5024570

UR/0070/65/010/005/0767/0769
548.0:535.378

AUTHOR: Belyayev, L. M.; Nabatov, V. V.; Pisarevskiy, Yu. V.; Shaldin, Yu. V. 11/15/65

TITLE: Laser-induced triboluminescence in LiF crystals

SOURCE: Kristallografiya, v. 10, no. 5, 1965, 767-769, and bottom half of insert facing p. 743

TOPIC TAGS: triboluminescence, laser beam, lithium fluoride, ruby laser

ABSTRACT: The disintegration of solid materials by intense light beams is reported. To demonstrate this, a ruby laser beam ($\lambda = 6943 \text{ \AA}$), focused by a lens with $f = 40 \text{ mm}$ on the center of an LiF crystal (average size $12.5 \times 8.5 \times 7.0 \text{ mm}$) with known triboluminescence properties, was used. The laser-induced triboluminescence was observed in LiF as one (filtered) line ($\lambda = 3470 \text{ \AA}$) by means of an FEU-42 photomultiplier. The laser- and tribo-pulses were registered on a DESO-1 oscillograph. A laser beam with a maximum density of 1.5 Mw/cm^2 concentrated on the crystal center caused a luminescence without disintegration, which was attributed to the heating of material at the lens focus. Crystal disintegration and the attendant triboluminescence were observed either after repeated bombardments by

Card 1/2

L 5082-66

ACC NR: AP5024558

ASSOCIATION: Institut kristallografi AN SSSR (Institute of Crystallography, AN SSSR);
Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 30 Jan 65

ENCL: 00

SUB CODE: SS

NO REF SOV: 005

OTHER: 000

Card

2/2 *h*

6

14.85

14.85

1 5082-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(s) IJP(c) JD/GG
 ACC NR: AP5024558 UR/0070/65/010/005/0742/0743

44.5 548.5 44.5 44.5

AUTHOR: Belyayev, L. M.; Dobrzanskiy, G. F.; Novozhikhareva, L. V.; Shaskol'skaya, M. P.

TITLE: Dependence of the perfection of structure and properties of crystals on growing methods

SOURCE: Kristallografiya, v. 10, no. 5, 1965, 742-743, and insert facing p. 742

TOPIC TAGS: single crystal growing, potassium chloride, crystal dislocation

ABSTRACT: A preliminary qualitative study of the effect of various growing techniques on the degree of perfection and properties of the KCl crystal was carried out. Seventy single KCl crystals were grown by the following techniques: Kyropoulos, Kyropoulos with constrictions, Czochralski, Stockbarger, zone crystallization, and aqueous solutions. The perfection of the crystals was determined from the dislocation density revealed by etch figures. The microhardness was obtained with a PMT-3 instrument, and the length of the etch-figure star was measured. KCl crystals with the lowest dislocation density were obtained by the Kyropoulos technique, particularly that involving constrictions. In these crystals, the dislocation density and microhardness decrease from the seed to the end of the crystal. The dependence of structural perfection on the growing methods was found to be quite strong; particularly apparent is the influence of the solvent and crucible. The desirable role of constrictions was confirmed. "The authors thank K. S. Chernyshev for assistance in the experiments." Orig. art. has: 1 figure and 1 table.

Card

1/2

09010193

BRILLOUIN, G.S.; BRILLOUIN, G.S.; BRILLOUIN, G.S.

Growing briscon. 02-1-1. Disinfectant to no. 34/44. 10-1-15.
(1117 1217)

1. Institut Brilouin et al. AN CNRS.

BELYAYEV, L.M.; FRANTSUZOV, Ya.L.; OBUKHOV, A.I., nauchn. red.;
ZHURAVLEV, B.A., red.

[Erecting freight and passenger suspended cableways]
Montazh gruzovykh i passazhirskikh podvesnykh kanat-
nykh dorog. Moskva, Stroiizdat, 1964. 250 p.
(MIRA 17:12)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204600031-6

2. JMWAVE 65
ACCESSION NRI AP500000

NO REF 80V: 000

OTHER: 000

Card 3/3 1/16

L. DUTSEV

ACCESSION NR: AP6008473

$10^{-1} - 5 \cdot 10^{-3} \text{ D/cm}^2$. The ends of the specimens were coated with indium by vacuum deposition. It was found that the maximum change in elasticity and in the damping constant takes place at maximum photosensitivity. Amplification of ultrasonic pulses was observed in some specimens when measuring attenuation with the application of an external electric field. The amplification amounted to 2.5-3 db/mm for a frequency of 20 Mc and a field strength of 1200 v/cm. Voltage-current characteristics show a deviation from linearity (current saturation) when the drift rate of the electrons is greater than the speed of the transverse or longitudinal ultrasonic waves (depending on the orientation of the specimen). Nonlinearity increases with the conductivity of the crystal. Drift mobility was found to be $130-150 \text{ cm}^2/\text{vsec}$. The sign of the electroacoustic emf corresponds to n-type conductivity in CdS. The pulse amplitude of the acoustic emf is in the order of dozens of millivolts. Orig. art. has 3 figures.

ASSOCIATION: Institut Kristallografi AN SSSR (Institute of Crystallography, Academy of Sciences SSSR)

SUBMITTED: 20 May 68

ENCL: 00

SUB CODE: SS, 47

Card 2/3

1-000000-05 ZEC(1)-1000000(1)/ZEC(1)/1 PL-4/T3-6 107(c) 00/K1

ACCESSION NO: AP0000000

9/0070/65/0.0/002/025/0.00

AUTHOR: Belavay, L. V.; Kvasil'nikov, P. A.; Lyamon, V. Ya.; Pirova, V. P.;
Sil'vestrov, A. N.; Shukov, S. P.; Gilyare, A. B.

TITLE: Interaction of ultrasonic waves with conduction electrons in cadmium sulfide

SOURCE: Kristallografiya, v. 10, no. 2, 1965, 252-255

TOPIC TAGS: cadmium sulfide, ultrasonic waves, photoconductivity

ABSTRACT: The strong interaction of conduction electrons with acoustic waves along definite crystallographic axis in CdS, together with the photoconductivity of this semiconductor material, which facilitates changing the electron concentration, make cadmium sulfide an excellent material for studying the interaction of ultrasonic waves with conduction electrons. These interactions take the form of attenuation, amplification or modulation of the ultrasonic wave, a change in the voltage-current characteristics of the crystal in a strong electric field, or an electroacoustic effect. All these effects were studied in CdS crystals grown from a melt. The specimens were cut in bars 5x6x7-8 mm. The hexagonal axis of the crystal was oriented both parallel with and perpendicular to the long dimension of the bar. Dark conduction was $10^{-10}-10^{-11}$ $\Omega \cdot \text{cm}^{-1}$. Illumination reduces the conductivity to

Card 1/3

ACC NR: AT6002244

formation of a charge on the dislocations by the uranium ions. An analogy was observed between the mechanical and triboluminescent properties of LiF + U crystals. It is concluded that the principal part in the phenomenon of triboluminescence is not played by the cloud of excess charges, but by the mobility of dislocations. Orig. art. has: 5 figures and 1 table.

SUB CODE: 20 / SUM DATE: none / ORIG REF: 006 / OTH REF: 001

Card

2/2

N I 11895-66 EWT(1)/EWT(m)/EPF(m)-2/T/EWP(+)/EWP(b) IJP(c)
 ACC NR: AT8002244 JD/WW/JG/GG SOURCE CODE: UR/2564/65/006/000/0129/0132
 AUTHOR: Belyayev, L. M.; Govorkov, V. G.; Dobrzanskiy, G. F.; Martyshev, Yu. N.;
 Shaskol'skaya, M. P.

ORG: none

TITLE: Growing of LiF crystals strengthened by adding uranium and study of their properties
 SOURCE: AN SSSR. Institut kristallografi. Rost kristallov, v. 6, 1965, 129-132

TOPIC TAGS: single crystal growing, lithium fluoride, uranyl nitrate, crystal dislocation, triboluminescence, hardness, *solid mechanical property*

ABSTRACT: LiF single crystals activated with $UO_2(NO_3)_2$ were grown from the melt by the Kyropoulos method. The infrared absorption spectra of LiF + U crystals obtained were almost identical to those of pure LiF. Three methods were used to study the mechanical properties of the crystals: (1) measurement of microhardness with a PMT-3 instrument; (2) compression tests with an instrument for micromechanical testing of materials; (3) study of the "star" of dislocations formed around the mark of the diamond indenter. It was found that the introduction of uranium increases the strength of LiF crystals by one order of magnitude and the microhardness by 20% without changing their transparency in the infrared. A shortening of the prongs of the "star" showed a decrease in the mobility of dislocations arising during plastic deformation. This decrease is thought to be caused chiefly by the

Card 1/2

BELYAYEV, L.M.; DOBRZHANSKIY, G.F.; PISAREVSKIY, Yu.V.; CHERNYSHEV, K.S.;
SHALDIN, Yu.V.

Electro-optical properties of copper chloride and copper bromide
crystals. Fiz. tver. tela 6 no.12:3727-3728 D '64 (MIRA 18:2)

1. Institut kristallografii AN SSSR, Moskva.

DOBRZHANSKIY, G.F.; BELYAYEV, L.M.; PEPETROV, I.P.; RYBKIN, Yu.F.; FEDOSOV,
A.Ye.; CHERNYSHEV, K.S.

Transmission spectra of single crystals of copper bromide and
chloride. Kristallografiya 9 no.6:928-929 N-D '64. (MIRA 18:2)

1. Institut kristallografii AN SSSR.

BELYAYEV, L.M., inzh.; ZELICHENOK, G.G., kand. tekhn. nauk;
KOVTONOV, A.V.; MAZO, L.I., inzh.; BAZHENOV, D.V., inzh.,
red.izd-va; SOKOLOVA, T.F., tekhn. red.

[Installation of hoisting and conveying machinery] Montazh
pod"emno-transportnykh mashin; kratkoe spravochnoe posobie.
[By] L.M. Beliaev i dr. Izd. 2., ispr. i dop. Moskva, Mash-
giz, 1963. 311 p. (MIRA 16:5)
(Hoisting machinery) (Conveying machinery)

BELYAYEV, Leonid Mikhaylovich; FRANTSUZOV, Yakov Leonovich;
KOPERIN, V.V., inzh., nauchnyy red.; TABUNINA, M.A., red.
izd-va; MOCHALINA, Z.S., tekhn. red.

[Assembly of hoisting and conveying machinery with continuous
and intermittent action] Montazh pod'emno-transportnykh mashin
nepreryvnogo i preryvnogo deistviia. Moskva, Gosstroizdat,
1962. 278 p. (MIRA 15:7)
(Conveying machinery) (Hoisting machinery)

FRANTSUZOV, Yakov Leonovich; HELIYAYEV, Leonid Mikhaylovich;
PLAVINSKIY, V.I., kand. tekhn. nauk, retsenzent;
VOYTSEKHOVSKIY, R.I., inzh., red.; GALANOVA, M.S., inzh.,
red. izd-va; UVAROVA, A.F., tekhn. red.

[Assembly and operation of suspended cableways] Montazh i
ekspluatatsiia podvesnykh kanatnykh dorog. Moskva, Mashgiz,
1962. 275 p. (MIRA 15:3)
(Cableways)

BELYAYEV, L.M., inzh.

Assembling a passenger cableway. Mont.i spets.rab.v stroi. 22
no.6:1-4 Je '60. (MIRA 13:7)

1. Leningradskoye proyektno-konstruktorskoye otdeleniye tresta
Soyuzprommekhanizatsiya.
(Cableways)

BELYAYEV, L.M., inzh.

Methods for anchoring veering cables. Mont.i spets.rab.v stroi.
22 no.4:22-24 Ap '60. (MIRA 13:8)

1. Leningradskoye proyektno-konstrukterskoye otdeleniye tresta
Soyuzprommekhanizatsiya.
(Cables)

BELYAYEV, Leonid Mikhaylovich; FRANTSUZOV, Yakov Leonovich; OBUKHOV, A.I.,
retsenzent; TSIPRINOVICH, A.Z., inzh., red.; STUPIN, A.K., red.
izd-va; EL'KIND, V.D., tekhn.red.

[Assembling of cranes and loaders] Montazh kranov i peregruzhatelei.
Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958.
299 p. (MIRA 11:5)
(Cranes, derricks, etc.)

BELYAYEV, L.M., inzh.; ZELICHENOK, G.G., kand. tekhn. nauk; KOVTUNOV, A.B.;
MAZO, L.I., inzh.; YAKOVLEV, V.N., inzh., red.; FRANTSUZOV, Ya.L.,
inzh. red.; MOLYUKOV, G.A., inzh., red. izd-va; TIKHANOV, A.Ya.,
tekhn. red.

[Assembling hoisting and transportation machinery; a concise hand-
book] Montazh pod"emno-transportnykh mashin; kratkoe spravochnoe
posobie. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry,
1958. 235 p.

(MIRA 11:7)

(Hoisting machinery)

BELYAYEV, Leonid Mikhaylovich; YUSHTIN, Yevgeniy Ivanovich; TITOV,
A.A., otvetstvennyy redaktor; MISHKEVICH, G.I., redaktor;
KAMOLOVA, V.M., tekhnicheskiiy redaktor.

[Safety engineering in the operation of hoisting machinery in
ship building] Tekhnika bezopasnosti pri ekspluatatsii gruzo-
pod"emnykh mekhanizmov, v sudostroenii. Leningrad, Gos.soiuznoe
izd-vo sudostroit.promyshl. 1957. 69 p. (MLRA 10:6)
(Cranes, derricks, etc.--Safety measures)

T 16577-65

ACCESSION NR: AP5000297

SUB CODE: OP, 88

NR REF SOV: 001

OTHER: 000

Card - 3/3

L 16577-65

ACCESSION NR: AP5000297

The samples were made in the form of plane-parallel plates ~3 mm thick. An infrared DS-301 spectrometer was used with presence of sodium chloride (up to 15 μ) and potassium bromide (up to 25 μ). A Hilger E-800 spectrometer was used above 25 μ (cesium iodide prism). The measurements show that the single crystals have good transmission on the order of 80% without selective absorption bands, up to ~18 μ for the chloride and 24 μ for the bromide, with a long-wave transmission limit at 22 and 32 μ respectively; they are therefore of interest for infrared technology and spectroscopy. "The authors thank Ye. I. Korotkova and L. D. Kislovskiy for help with the optical measurements and Ye. P. Meshcheryakova for the x-ray analysis." Orig. art. has: 2 figures.

ASSOCIATION: Institut kristallografi AN SSSR (Institute of Crystallography AN SSSR)

SUBMITTED: 09Jun64

ENCL: 00

Card 2/3

1 16577-65 EWT(m)/EWP(t)/EWP(b) RAEM(c)/ESD(t)/ESD(gs)/AFWL/ASD(a)-5/
AS(mp)-2/AFMD(t)/IJP(a) JD

ACCESSION NR: AP5000297

8/0070/64/009/006/0928/0929

AUTHORS: Dobrzanskiy, G. F.; Belyayev, L. M.; Petrov, I. P.;
Ryabkin, Yu. F.; Fedosov, A. Ye.; Chernyshev, A. S.

TITLE: Transmission spectra of copper chloride and bromide single
crystals

SOURCE: Kristallografiya, v. 9, no. 6, 1964, 928-929

TOPIC TAGS: copper compound, single crystal, ir spectrum, optical
transmission, crystal growth

ABSTRACT: The transmission spectra of single crystals of copper
chloride and bromide were measured in the infrared region of the
spectrum. The crystal growth procedure was described by some of
the authors elsewhere (Collection: Rost kristallov [Crystal Growth]
v. 3, 342, 1961). Particular attention was paid to the purity of
the initial reagent and thorough cleaning of the produced crystal.

Card 1/3

ACCESSION NO: AP4012285

The velocity of indenter movement varied from 10^{-4} to 5×10^{-2} cm/sec, and the load on the indenter varied from 5 - 200 g. It was found that the number of light flashes per unit length of indenter travel was a function of surface condition, of the indenter shape, the load, and the velocity of movement. Both the number and the brightness of flashes increased nearly linearly with the load and with the velocity of the indenter. A larger number of flashes was produced by the steel pyramid with a 60° vertex than by the one with a 90° vertex. A microscopic investigation proved that flashes appeared at the moment when cracks appeared in front of an indenter. Orig. art. has: 1 table and 2 figures (Abstractor's note: figures are not shown).

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography AN SSSR)

SUBMITTED: 02Mar63

DATE ACQ: 19Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 004

OTHER: 001

Card 2/2

ACCESSION NO: AP4012285

S/0070/64/009/001/0117/0119

AUTHORS: Belyayev, L. M.; Marty*shev, Yu. N.

TITLE: Triboluminescence of lithium fluoride crystals

SOURCE: Kristallografiya, v. 9, no. 1, 1964, 117-119

TOPIC TAGS: lithium fluoride, triboluminescence, PMT 3 hardness gauge, FEU 16A photoamplifier, PC 64 M counter, DESO 1 oscillograph, OK 17M oscillograph

ABSTRACT: This study of triboluminescence in lithium fluoride crystals was conducted in order to solve the problems left untouched in the previous work by L. M. Belyayev, V. V. Nabotov, and Yu. N. Marty*shev (Kristallografiya, 7, 4, 576-580, 1962). For measuring microhardness the apparatus PMT-3 was used; specimens could be rotated in a horizontal plane. It also recorded photoelectrically the flares of light. A diamond pyramid and two steel cones (with 60° and with 90° vertex angles) were used as indentors. The photoamplifier FEU-16A was mounted vertically on the stage of the PMT-3, and the specimens were fixed on the cathode of the FEU. Recording of the light impulses was accomplished with the counter PS-64-M (through an amplifier USH-10) and with oscillograph DESO-1 or OK-17M. Specimens in the form of plates (15 x 15 x 1 mm) were broken out along cleavage planes of heat-treated crystals.

Card 1/2

1 16354-65

ACCESSION NR: AP5000586

ENCLOSURE: 01

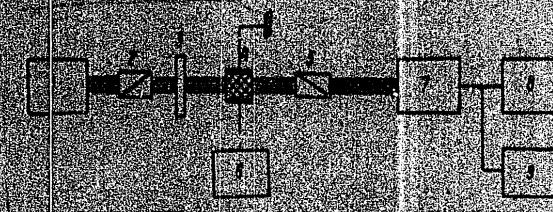


Fig. 1. Block diagram of setup for the measurement of the electro-optical effect.

- 1 - monochromator, 2 - polarizer, 3 - quarter-wave plate,
4 - crystal sample, 5 - analyzer, 6 - high voltage source,
7 - photodetector, 8 - millivoltmeter, 9 - universal voltmeter

3/3
Card

1 16154-65

ACCESSION NR: AR5000586

3

values obtained for the product of the cube of the refractive index and the electro-optical coefficient were found to be, at 525 and 675 nm respectively, 29 and 34 for CuCl and 22 and 26 for CuBr . The low values obtained for this product are probably due to the presence of stresses in the crystal and to inaccurate orientation. "The authors thank N. V. Gliko and O. K. Mel'nikov for help in the orientation of the samples." Orig. art. has: 1 figure, 2 formulae, and 1 table.

ASSOCIATION: Institut kristallografi AN SSSR, Moscow (Institute of Crystallography AN SSSR)

SUBMITTED: 10Jul64

INCL: 01

SUB CODE: OP, SS

NR REF SOV: 000

OTHER: 00

Card 2/3

1 16554-65 ENT(m)/ENT(t)/ENT(p) LUP(c)/LSD(Y)/SSD/APWL/RAEM(a)
 00

ACCESSION NR: AF5000685

8/0181/64/006/011/3727/3728

AUTHOR: Belvayev, L. M., Dobrenskiy, G. F., Pisarevskiy, Yu. V.,
 Chernyshov, A. B., Shargin, Yu. V.

TITLE: Electro-optical properties of copper chloride and copper
 bromide crystals

SOURCE: Fizika tverdogo tela, v. 6, no. 12, 1964, 3727-3728

TOPIC TAGS: electrooptical property, copper inorganic compound,
 refractive index

ABSTRACT: The authors measured the total electro-optical effect of
 copper chloride and copper bromide crystals, obtained from a melt
 and annealed. The experimental setup is shown in Fig. 1 of the en-
 closure. The samples were oriented by x-ray diffraction and by
 etch figures, with final orientation based on the maximum of the
 effect. The electrodes on the sample were sputtered in vacuum. The

Card 1/3

ACCESSION NR: AP4043386

ENCLOSURE: 02

Values of ϵ and $\tan \delta$ for cubic crystals

Участок, Па	$N(CH_3)_4$		$N(CH_3)_3$		$CuCl$	
	ϵ	$\tan \delta$	ϵ	$\tan \delta$	ϵ	
ОТНОШЕНИЯ ДАННЫХ						
10^2	2.5 ± 0.2	0.1	2.5 ± 0.2	0.1	10.0 ± 0.5	—
10^3	2.5 ± 0.2	0.065	2.5 ± 0.2	0.04	9.8 ± 0.5	—
10^4	2.5 ± 0.2	0.018	2.5 ± 0.2	0.011	9.2 ± 0.5	—
10^5	2.5 ± 0.2	0.005	2.5 ± 0.2	0.001	8.8 ± 0.5	—
$9.8 \cdot 10^5$	2.6 ± 0.2	0.005	2.6 ± 0.2	0.0008	8.6 ± 0.5	—
$9.4 \cdot 10^6$	2.6 ± 0.2	0.005	2.6 ± 0.2	0.0008	8.4 ± 0.5	—
$3.96 \cdot 10^{10}$	2.6 ± 0.2	0.005	2.6 ± 0.2	0.0008	8.3 ± 0.5	—

Card 4/4

ACCESSION NR: AP4043386

ENCLOSURE: 01

Values of ϵ and $\tan \delta$ for uniaxial crystals

$\nu_{\text{частоты, ц/с}}$	$\text{NH}_4\text{H}_2\text{PO}_4$			KH_2PO_4		
	ϵ_{\parallel}	ϵ_{\perp}	$\lg \delta_{\parallel}$	ϵ_{\parallel}	ϵ_{\perp}	$\lg \delta_{\parallel}$
	ОТНОШЕНИЯ ЗНАЧЕНИЙ					
10^2	16.0 ± 0.5	55.8 ± 1.5	0.1	21.8 ± 0.5	43.7 ± 1.5	0.06
10^3	15.9 ± 0.5	57.0 ± 1.5	0.065	21.3 ± 0.5	43.3 ± 1.5	0.008
10^4	15.5 ± 0.5	56.0 ± 1.5	0.018	20.8 ± 0.5	43.2 ± 1.5	0.002
10^5	15.3 ± 0.5	55.8 ± 1.5	0.005	20.1 ± 0.5	43.0 ± 1.5	0.0006
$9.8 \cdot 10^8$	15.0 ± 0.5	55.5 ± 1.5	0.005	20.0 ± 0.5	42.5 ± 1.5	0.0005
$9.4 \cdot 10^9$	14.7 ± 0.5	55.3 ± 1.5	0.041	19.7 ± 0.5	42.3 ± 1.5	0.0008
$3.96 \cdot 10^{10}$	14.0 ± 0.5	55.0 ± 1.5	0.08	19.6 ± 0.5	42.0 ± 1.5	0.003

1 - Frequency, cps, 2 - relative values
Card 3/4

ACCESSION NR: AP4043386

determination of the quantities of interest are taken from the book by A. R. Hippel (Dielectrics and Waves, N.Y., 1954). The data lead to the conclusion that the bandwidth properties of modulators which use the electro-optical effect in these crystals is limited to the centimeter wavelength band by the increase in thermal effect, which lead to breakdown of the crystals. Similar tests made on cubic crystals $N_4(CH_2)_6$ and $CuCl$ show $N_4(CH_2)_6$ to be preferable for these purposes because they have a smaller loss angle in the millimeter band, and because the phase velocity of the light wave is equal to the phase velocity of the microwave. Orig. art. has: 2 tables.

ASSOCIATION: Institut kristallografii AN SSSR, Moscow (Institute of Crystallography, AN SSSR)

SUBMITTED: 24Jan64

ENCL: 02

SUB CODE: OP, SS

NR REF SOV: 000

OTHER: 004

Card 2/4

ACCESSION NR: AP4043386

S/0181/64/006/008/2526/2528

AUTHORS: Belyayev, L. M.; Belikova, G. S.; Dobrzanskiy, G. F.;
Nemesov, G. B.; Shaldin, Yu. V.

TITLE: Dielectric constant of crystals possessing the electro-
optical effect

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2526-2528

TOPIC TAGS: dielectric constant, dielectric loss, electrooptic de-
vice, phosphate, optical communication, ir communication

ABSTRACT: The authors measured the dielectric constant ϵ and the
loss angle tangent $\tan \delta$ in the frequency range from 10^2 to 40×10^9
cps of the crystal $\text{NH}_4\text{H}_2\text{PO}_4$ and KH_2PO_4 relative to the corresponding
values for air. The dispersion properties of these constants are im-
portant because the electro-optical effect in crystals is used for
broadband modulation of electromagnetic radiation at optical and in-
frared wavelengths. The test procedure and the formulas for the

Card 1/4

ACCESSION NR: AP4013540

thank V. M. Fridkin for advice and consideration of the results and V. P. Konstantinova and L. A. Shuvalov for providing the crystals. Orig. art. has: 1 diagram.

ASSOCIATION: Institut kristallografii AN SSSR Moscow (Institute of Crystallography AN SSSR)

SUBMITTED: 08Oct63

DATE ACQ: 03Mar64

ENCL: 01

SUB CODE: PH

NO REF SOV: 001

OTER: 004

Card 2/37

ACCESSION NR: AP4013540

S/0181/64/006/002/0645/0647

AUTHORS: Belyayev, L. M.; Bendrikova, G. G.

TITLE: Influence of spontaneous polarization on the yield of photostimulated exoelectron emission for triglycinesulfate crystals

SOURCE: Fizika tverdogo tela, v. 6, no. 2, 1964, 645-647

TOPIC TAGS: spontaneous polarization, photostimulated emission, exoelectron emission, triglycinesulfate, ferroelectric crystal

ABSTRACT: The influence of spontaneous polarization in ferroelectric crystals on the yield of photostimulated exoelectron emission was investigated using ferroelectric triglycinesulfate sheets 1.5-2 mm thick. Polarization was produced by an electric field of about 4000 v/cm with the electrodes mounted on the (010) surfaces. The results are shown in Fig. 1 of the Enclosure. Curve a was obtained for the unpolarized sample and curves b₁ and c₁ for the illuminated surface charged negatively and positively, respectively. Curves b₂ and c₂ are the corresponding results for a repeated cycle. It is uncertain whether the results are due to a decrease of the work function conditioned by the domain orientations in the crystal or to a direct filling-up by electrons of the crystal surface levels. The authors

Card 1/32

ACCESSION NR: AT4040553

ENCLOSURE: 01

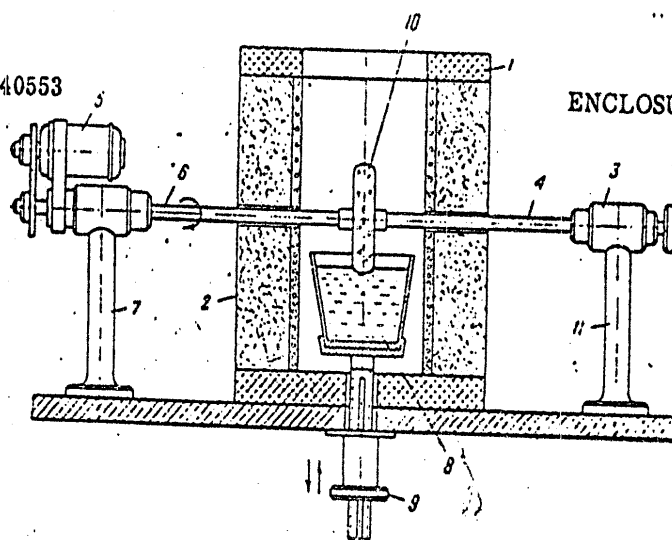


Fig. 1. Schematic diagram of the apparatus.

Card 3/3

51"
ACCESSION NR: AT4040553

practically any diameter can be obtained using the assembly. A constant distribution of temperatures in both zones of the process is insured and the possibility of additional thermo-elastic stresses in the growing crystal is eliminated. The shape of the growing crystal can be changed by changing the slope of the crystal holder. "The authors thank V. P. Belov (deceased) and A. M. Kevorkov for their assistance in designing the set-up, and G. B. Netesov and K. S. Cherny*shev for conducting the crystallization experiments. Orig. art. has: 3 figures.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 00

DATE ACQ: 02Jul64

ENCL: 01

SUB CODE: IC

NO REF SOV: 002

OTHER: 002

2/3
Card

ACCESSION NR: AT4040553

S/2564/64/004/000/0089/0091

AUTHOR: Belyayev, L.M.; Dobrzhanskiy, G.F.; Bagdasarov, Kh. S.

TITLE: Some changes in the method of growing crystals from a melt

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v. 4, 1964, 89-91

TOPIC TAGS: crystallography, crystal growth, crystal cultivation, crystal shape, lithium fluoride, cesium iodide, naphthalene

ABSTRACT: To facilitate the process of growing crystals of prescribed size and shape, the authors designed the modified set-up shown in the Enclosure. The set up consists of an electrical oven (1) with thermoinsulation (2) into which, on a movable stand (9), a crucible with a reactant (8) is placed. The crystal holder (4, 6) is fixed on the supports (7, 11) and can be rotated by the motor (5) to bring the seed crystal (10) into the desired position, where it is fixed by the clamp (3). Using this set-up, the authors obtained crystals of LiF and CsI at a rate of 20-25 mm/hr with a 6-8 mm thick seed crystal, and crystals of naphthalene at a rate of 25-30 mm/hr with a 7-9 thick seed crystal. Crystals of prescribed thickness with

Card 1/3

BELYAYEV, L.M.; NABATOV, V.V.

Irregular triboluminescence in lithium fluoride crystals.
Kristallografiia 8 no.6:927-928 N-D'63. (MIRA 17:2)

1. Institut kristallografi AN SSSR.

L 12810-63

ACCESSION NR: AP3000791

linear effect it was impossible to determine precisely the electrooptical constant. A preliminary approximation was made, however, by measuring total transmission when the crystal was between crossed polarizing plates and by comparing this value with the voltage applied. Similar measurements were made through the central part of the dark cross. Results show hexamethylenetetramine to be as satisfactory as previously used material. It also has two other pass bands in the infrared region of the spectrum. Orig. art. has: 2 figures.

ASSOCIATION: Institut kristallografi AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 02Feb63

DATE ACQ: 21Jun63

ENCL: 00

SUB CODE: 00

NO REF SOV: 000

OTHER: 000

Card 2/2

L 12810-63 BNP(j)/EPF(c)/EWT(1)/EWT(m)/BDS AFFTC/ASD/ESD-3 PC-4/
Pr-4/Pi-4 GG/EM/WM/JW/LJP(C)
ACCESSION NR: AP3000791

S/0070/63/008/003/0482/0483 81

AUTHOR: Belyayev, L. M.; Vlokh, O. G.; Gil'varg, A. B.; Dobrzhanskiy, G. F., 80
Netesov, G. B.; Shimburov, V. A.; Shuvalov, L. A.

TITLE: Linear electrooptical effect in crystals of hexamethylenetetramine 7
(urotropin) C sub 6 H sub 12 N sub 4

SOURCE: Kristallografiya, v. 8, no. 3, 1963, 482-483

TOPIC TAGS: hexamethylenetetramine, urotropin, electrooptical effect, ZnS, CuCl, electrooptical constant

ABSTRACT: This study was undertaken because the only two commonly employed crystals with sufficient electrooptical effect for practical use (ZnS and CuCl) are generally of unsatisfactory quality or are difficult to obtain. The authors obtained hexamethylenetetramine by sublimation in a vacuum and found it to form well-developed rhombic dodecahedrons. In polarized light the specimens exhibit a dark cross in the middle of the field and a black border about the edge, with four light areas in the centers of the four quadrants. When an electrical field was impressed at right angles to the direction of light propagation, voltages up to 10 kv, the light patches became dark and the dark areas lightened. This effect proved to be linear, the change depending on the applied voltage. Because of this

Card 1/2

The growth of crystals ...

S/070/62/007/005/001/014
E132/E460

The effect of impurities on the dislocation structure.
The production of dislocation-free crystals.
Special demands: production of crystals of super-pure materials by
methods not employing crucibles. Improvements to the Verneuil method.
Zone melting. Crystallization with a steep temperature gradient.
Growth from non-aqueous solutions. Crystallization as a result of
chemical reactions. Development of control devices for
regulating crystallization. Obtaining thin single crystal layers
of semiconductors etc. Liquidation of gaps between theory and
practice. For the successful solution of problems of growth
kinetics it is necessary to organize interdisciplinary collectives.

Card 2/2

S/070/62/007/005/001/014
E132/E460

AUTHORS: Belyayev, L.M., Chernov, A.A.

TITLE: The growth of crystals and the study of the kinetics
of their formation

PERIODICAL: Kristallografiya, v.7, no.5, 1962, 659-663

TEXT: "Editorial review", exhorting attention to general
and specific topic in crystal growth such as:

Nucleation of crystals, mechanism and kinetics of the motion of
interphase boundaries, formation of metastable (for example
defective) crystal structures at finite rates of growth.

1) Nucleation. The use of the electron microscope to obtain
information on the microstructure of nuclei is urged. The
quantitative dependence of nucleation on conditions (transport,
temperature, concentration etc) in the mother liquor must be found.

2) Growth rates. Studies of the microprocesses at the
boundaries and of the bulk process (heat flow in mother liquor,
material transport etc) are needed.

3) Defect formation: microscopic and macroscopic defects.
Interaction of impurities with the growing crystal.

Card 1/2

The time of illumination ...

S/070/62/007/004/006/016
E132/E435

(if it exists at all). An electric discharge is produced on breaking a crystal and an electromagnetic pulse (picked up on a small antenna) accompanies the light discharge. Crystalloluminescence, observed in the crystallization of barium chlorate and glaserite is due to the tribo-luminescence of these crystals in the solution. There are 4 figures.

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography AS USSR)

SUBMITTED: September 21, 1961

Card 2/2

S/070/62/007/004/006/016
E132/E435

AUTHORS: Belyayev, L.M., Nabatov, V.V., Martyshev, Yu.N.

TITLE: The time of illumination in the processes of tribo-
and crystallo-luminescence

PERIODICAL: Kristallografiya, v.7, no.4, 1962, 576-580

TEXT: Tribo-luminescence is the excitement of light from a crystal by mechanical means and crystallo-luminescence is the production of light during the crystallization of a salt. Specimens of the alkali halides LiF, NaCl, KCl, CsI, KI(Tl) in the form of prisms, 3 x 3 x 6 mm, were examined in an adapted apparatus for measuring the mechanical properties of small crystals. It was evacuated and two photomultipliers were used to record the emission of light from the crystal on mechanical deformation. The photomultiplier and extensometer records were exhibited simultaneously on an oscillograph and were photographed. It was concluded from this preliminary study that in tribo-luminescence it is essential to describe the character, especially the speed of the mechanical deformation, which the crystal undergoes. The fraction of photoluminescence in tribo-luminescence is small

Card 1/2

ACCESSION NR: AT4016304

elongation in a dark chamber using a Dubov micromechanical testing device which allows an absolute compression or elongation rate of $1.0 \cdot 10^{-4}$ to $1.5 \cdot 10^2$ mm/min. The radio-electron pulse recording system, operable at 5-50 mv on a wave front up to 0.06 μ sec, consisted essentially of two FEU-29 photomultipliers examining the pulse duration and shape and activating the oscillograph. Deformation curves on which flashes are recorded showed different patterns for different crystals. At a set compression rate of 0.5 mm/min, LiF and CsI were found to produce most numerous flashes, while NaCl and KI-Tl were generally inactive. "The authors thank K.P. Bondarenko for participating in the assembly design and V.P. Panova and G.G. Bendrikova for participating in the experiments." Orig. art. has: 3 figures.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography AN SSSR)

SUBMITTED: 00

DATE ACQ: 06Mar64

ENCL: 00

SUB CODE: PH

NO REF SOV: 004

OTHER: 001

Card 2/2

ACCESSION NR: AT4016304

S/0000/62/000/000/0179/0182

AUTHOR: Belyayev, L.M.; Marty*shev, Yu. N.; Nabatov, V.V

TITLE: Investigation of luminescence during crystal fracturing. Duration of luminescence

SOURCE: Vses. soveshch.po fiz. shchelochnogaloidn. kristallov. 2d, Riga, 1961. Trudy*. Fiz. shchelochnogaloidn kristallov (Physics of alkali halide crystals). Riga, 1962, 179-182

TOPIC TAGS: luminescence, crystal fracturing, triboluminescence, luminescence duration, crystallography, alkali halide crystal

ABSTRACT: In an effort to extend the limited knowledge of the phenomenon known as triboluminescence, the authors set up an assembly which permitted 1) uniform deformation of crystal samples at the point of fracture, either at atmospheric pressure or in a vacuum 10^{-5} mm; 2) synchronous recording of the deformation curve and flashes occurring during deformation; 3) counting the total flash number; and 4) determining the shape of the flash pulses and estimating their length. Samples of LiF, NaCl, KCl, CsI and KI-Tl, shaped as $3 \cdot 3 \cdot 6$ mm tetragonal prisms, were subjected to monoaxial compression and

Card: 1/2

BELYAYEV, I.M., kand.fiz.-matem.nauk

Conference on monocrystals. Vest. AN SSSR 31 no.11:99-100 N
'61. (MIRA 14:11)
(Crystallography--Congresses)

22196

Luminescence of uranium-activated ...

S/048/61/025/004/045/048
B117/B209

studies show that the luminescence of hexavalent uranium ions is to be regarded as a superposition of forced electric and magnetic dipole radiations. It was found that one of the two principal electron vibration series observed in the spectra of the crystals concerned is formed by electric, the other by magnetic emitting dipoles. The sub-series in the NaF-U spectrum are also formed by one kind of emitters, viz., either by electric or by magnetic ones. In this way, the level schemes shown in Fig. 9 can be set up. They describe the principal lines in the relatively long-wave section of the spectrum of these crystals, which begins with the resonance lines of the longest wavelength. I. P. Shapiro is mentioned. There are 9 figures, 1 table, and 16 references: 13 Soviet-bloc and 3 non-Soviet-bloc.

Card 4/6/

22196

Luminescence of uranium-activated ...

S/048/61/025/004/045/048
B117/B209

dependence of the degree of polarization on the wavelength in the luminescence spectrum showed a characteristic, though not quite understandable shape. (The authors thank P. I. Kudryashev for the device by means of which the curves were taken). This shape can hardly be the object of a serious discussion since it is the rather complex result of superimposition of elementary radiations, which are clearly manifest in the investigation of cooled crystals. The polarization spectra of the crystals examined resemble essentially the polarization spectra of most of the dyes. The presence of highly polarized lines in the luminescence spectra of the crystals concerned permits employing the method of the luminescence polarization diagrams which has been suggested by S. I. Vavilov (Ref. 11: Zh. eksperim. i teor. fiz., 10, 1363 (1940) and Sobr. soch. 2, 58, 1952). With the help of this method, the nature (multipole order) of elementary oscillators can be clearly determined in most cases. The results of the determination of the multipole order are compiled in the table, showing that the long-wave section of the luminescence spectrum is formed by linear oscillators. The group of short-wave lines in the LiF-U spectrum is described by circular oscillators σ_e and σ_m . The results of these

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22196

S/048/61/025/004/045/048
B117/B209

Luminescence of uranium-activated ...

may be excited in the long-wave region of the absorption bands as well as in the ultraviolet region. The structural character of the luminescence spectra is clearly distinct already at room temperature. Cooling gives rise to many lines the width of which in many cases is only fractions of an angstrom. Many of the lines can be counted as resonance lines since they occur in the luminescence- as well as in the absorption spectra. The only law which so far has been found in low-temperature luminescence spectra is the existence of equidistant series which contain particularly bright lines that have been always observed in all samples. In general, the luminescence of LiF-U and NaF-U single crystals excited by linearly polarized light is partly polarized. The degree of polarization clearly depends on the mutual position of the crystallographic axes of the sample and on the electric vector of the exciting light (azimuthal dependence), on the wavelength of the exciting light (polarization spectrum), and on the wavelength in the luminescence spectrum. In the study of the azimuthal dependence (provisional results for LiF-U are found in Ref. 5: P. P. Feofilov, Optika i spektroskopiya, 7, 842 (1959)) the authors found an orientation of the luminescence centers along the fourth-order symmetry axis. The curves taken for the

Card 2/8

24.3500

22196
S/048/61/025/004/045/048
B117/B209

AUTHORS: Belyayev, L. M., Dobrzanskiy, G. F., and Feofilov, F. P.

TITLE: Luminescence of uranium-activated lithium- and sodium fluoride single crystals

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 4, 1961, 548-556

TEXT: The present paper was read at the 9th Conference on Luminescence (Crystal Phosphors) and contains data on the luminescent properties of uranium-activated lithium- and sodium fluoride single crystals. The single crystals were grown from a melt according to a method by Kyropoulos. The activator in the form of uranyl nitrate was added in concentrations of 0.01 to 0.3%. In the visible range of the absorption spectra of the crystals concerned, weak bands with a clear structure as well as a strong absorption in the ultraviolet range with several blurred maxima can be observed at room temperature. When temperature is lowered to that of liquid nitrogen, the long-wave bands are split up into a large number of very narrow lines. The luminescence of LiF-U and of NaF-U single crystals

Card 1/6

32048

Study of the kinetics of the ...

S/051/61/011/005/008/018
E202/E192

non-Soviet-bloc publication, and 11 non-Soviet. The four most recent English language references read as follows:

Ref.11: I. Birks, Phys.Rev., v.94, 1567, 1954.

Ref.14: S.C. Ganguly, N.K. Choudhury. Rev. Mod. Phys., v.31, 920, 1960.

Ref.15: O. Simpson. Proc.Roy.Soc., A238, 402, 1957.

Ref.19: D.C. Northrop. O. Simpson, Proc.Roy.Soc., A234, 136, 1956.

SUBMITTED: December 9, 1960

Card 3/4

32048

Study of the kinetics of the ...

S/051/61/011/005/008/018
E202/E192

naphthalene each. The molecular concentration ratio of AK/NAPH was 0.0002, and DPB/NAPH = DPH/NAPH = 0.0003, so that the X-ray measurements did not disclose any changes in the lattice parameters. However, the changes in the luminescence properties were indicative of a true solid solution. The specific times of light persistence and the times of light persistence for low and high concentrations of activators are given in Table 1. The actual process of the energy migration in a crystal was explained as follows: during the absorption of light in the lattice of a molecular crystal, an exciton is formed which moves within the regular field of the lattice with the characteristics of a diffusion process. The exciton is localised in the excited field near the activator, part of its energy is scattered and finally it is captured by the activator. Hence the total measured time of the persistence of light consists of three stages: 1 - time of exciton diffusion; 2 - time of exciton's life in a localised state; 3 - specific time of light persistence of the activator. Each of these times was evaluated. There are 4 figures, 3 tables and 20 references: 8 Soviet-bloc, 1 translation into Russian from

Card 2/4
3

X

32048

55310 also 1138

S/051/61/011/005/008/018
E202/E192

AUTHORS: Bonch-Bruyevich, A.M., Kovalev, V.P., Belyayev, L.M.,
and Belikova, G.S.

TITLE: Study of the kinetics of the sensitised luminescence
of certain additives in naphthalene crystals

PERIODICAL: Optika i spektroskopiya, v.11, no.5, 1961, 623-628

TEXT: Studies of photoluminescence of naphthalene crystals
were carried out using the following activating additives:
anthranilic acid (AK); 1,4-diphenylbutadiene-1,3 (DPB);
1,6-diphenylhexatriene-1,3,5 (DPH). The time of decay of the
activating additive was measured by means of phase fluorometer.
The crystal was excited within the absorption bands of
naphthalene skeleton (i.e. $\lambda_B = 313 \text{ m}\mu$), and the activator at
 $\lambda_B = 365 \text{ m}\mu$. In the case of AK molecule (which is similar to
naphthalene) a simple replacement in the lattice of the latter was
thought to be the most likely mechanism. DPB and DPH molecules,
although quite different from the naphthalene molecule, were
considered to be able to replace in the lattice two molecules of

Card 1/4

22878

CsI(Tl) scintillators for the recording...

S/089/61/010/005/006/015
B102/B214

Diameter of the source in mm	Spectral resolution for Am^{241} alpha particles, %
30	3.5-4.0
40	4.0-4.5
50	5.5-6.3
55	5.2-6.3

The spectrometric parameters of the scintillators depend on the thickness of the crystal and the surface treatment. When the thickness changes from 2 to 0.2 mm (for 30 mm diameter) the resolution is improved from 4.2 to 3.5 %. By polishing the cut surface the resolution could be brought to 4.1 % from 4.5 % and the yield of light increased by 5 %. There are 1 figure and 6 references; 1 Soviet-bloc and 5 non-Soviet-bloc. The most important references to English-language publications read as follows: I. Robertson, A. Ward. Proc. Phys. Soc., 73, No. 3, 523 (1959); M. Halbert. Phys. Rev., 107, No. 3, 647 (1957).

SUBMITTED: October 17, 1960

Card 3/3

22878

CsI(Tl) scintillators for the recording...

S/089/61/010/005/006/015
B102/B214

The degree of inhomogeneity of the system scintillator - photomultiplier was investigated by means of a moving alpha source Am^{241} . On displacing the source from the center to the periphery there resulted a decrease in the amplitude of the alpha peak by 30 % and a corresponding deterioration in resolution. The inhomogeneity is due to the inhomogeneous distribution of the activator in the alkali halide and it exhibits itself in a dependence of the light yield at the place where the alpha particle appears. In the scintillators discussed here it does not amount to more than 4% which corresponds to a fluctuation of the spectral resolution by 0.4-0.5 %. An investigation of the difference of sensitivity in the different parts of the photocathode of FEU-29 showed that at a distance of 15 mm from the center of the photocathode the Am^{241} alpha peak undergoes an amplitude decrease of 25-30 %. That means that the inhomogeneity of the photocathode of the photomultiplier is the principal cause of the error appearing in the photometric measurement. In all 14 thin CsI(Tl) scintillators 30-55 mm in diameter were prepared. The following results are obtained for central excitation by Am^{241} alpha radiation when the source diameter was 3 mm:

Card 2/3

22878

S/089/61/010/005/006/015
B102/B214

21.5200

AUTHORS: Belyayev, L. M., Gil'varg, A. B., Panova, V. P.

TITLE: CsI(Tl) scintillators for the recording of α -particles

PERIODICAL: Atomnaya energiya, v. 10, no. 5, 1961, 502-503

TEXT: The authors investigated the possibility of preparing large CsI(Tl) crystals for scintillators 30-55 mm in diameter with high resolution for the purpose of α -particle detection and spectrometry. The CsI(Tl) crystals prepared in the Institut kristallografi AN SSSR (Institute of Crystallography AS USSR) as well as industrially manufactured crystals were used for the preparation of thin scintillators. The carefully polished thin crystal plates were glued to 1.5-2 mm thick glass bases. The characteristics of the CsI(Tl) scintillators were taken by the help of a one channel scintillation spectrometer with the photomultipliers of the type $\Phi\text{Y-24}$ (FEU-24) and $\Phi\text{Y-29}$ (FEU-29). For scintillators of thickness 0.4 and 0.2 mm with diameters 30, 40, 50, and 55 mm spectral resolutions of 14-22 % (FEU-24) and 11-18 % (FEU-29) were obtained on excitation with alpha particles of Pu^{239} . The alpha radiation used was monochromatic up to ± 5 %.

Card 1/3

Growing of Cadmium Sulphide Crystals ..

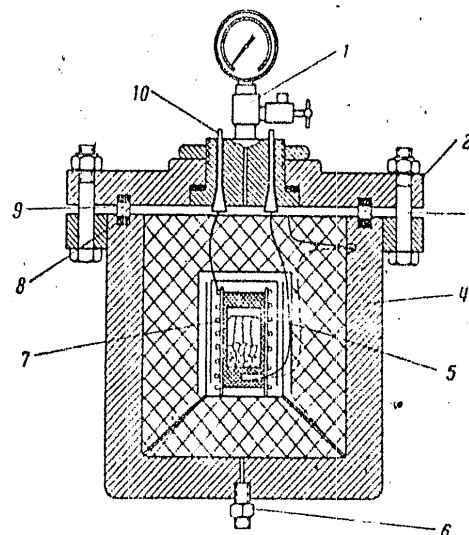
25894

S/070/61/006/004/006/007
E073/E335

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography of the
AS USSR)

SUBMITTED: October 25, 1960

Fig. 1:



Card 4/4

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S/070/61/006/004/006/007
Growing of Cadmium Sulphide Crystals E073/E335

formed at the bottom of the crucible due to the fact that the heat was removed primarily through the bottom. The produced single CdS crystals are of an orange colour, they are transparent and in thin layers; the intensity of the coloration along the height of the ingot differs somewhat; brighter sections form at the beginning of the growth of the crystal and darker sections form at the end. In experiments carried out at temperatures considerably above the CdS fusion temperature, the centre part of the ingot contained a large quantity of fine cavities and bubbles, which is obviously associated with partial dissociation of the CdS. The weight losses during crystallisation did not exceed 10%.

There are 3 figures and 6 references: 1 Soviet and 5 non-Soviet. The three English-language references quoted are: Ref. 1 - R. Frerichs - Phys. Rev., 72, 7, 594-601, 1947; Ref. 3 - A. Addamiano - J. Phys. Colloid. Chem., 61, 9, 1253-1254, 1957; Ref. 5 (quoted in text).

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inert gas. Inlet 6 is used for purging the cylinder before an experiment. For thermal insulation, the entire internal volume between the walls of the vessels and the reflecting screens is filled with magnesium oxide or aluminium oxide. To improve the cooling of the cylinder walls the entire cylinder is placed into a container with running water. The heating element is a spiral of molybdenum wire which surrounds the crucible containing pressed CdS powder. The crucible is made of pure graphite. Tests were conducted in which the temperature was gradually raised to 20-30 °C above the melting point of CdS, maintained for 1.5 hours and then lowered at a rate of 30 °C/hour. It was found that the optimum growth of crystals is achieved at 150-180 atm. pressure of the inert gas, which corresponds to an initial pressure of 80-100 atm. In the tests, columnar CdS single crystals were obtained, which grew together, parallel to each other. The single crystals could be easily separated from each other by fracturing. In most cases the c axis coincided with the vertical axis of the ingot. The growth of these crystals was initiated from large CdS crystallisation centres which

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